



N00217.003406
HUNTERS POINT
SSIC NO. 5090.3

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street
San Francisco, CA 94105-3901

March 18, 1996

Mr. Richard Powell
Mail Code 09ER1
Engineering Field Activities West
900 Commodore Drive, Building B102
San Bruno, CA 94066-2402

**SUBJECT: DRAFT PARCEL B REMEDIAL INVESTIGATION REPORT, HUNTERS
POINT ANNEX, SAN FRANCISCO CALIFORNIA**

Dear Mr Powell:

Enclosed please find the Environmental Protection Agency (EPA) comments regarding the subject document submitted on January 31, 1996 and the revised risk assessment report submitted on February 28, 1996. Overall, the document has several major deficiencies, as identified in our specific comments, that make it difficult to provide complete comments at this time. The document has several typographic errors, awkward sentences, incorrect grammar, misspellings, "queried notes," and incorrect chemical names and is not organized according to the outline agreed to in February 1995.

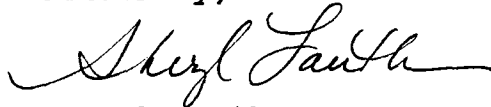
The recommendations for no further action are based on a risk value of 9×10^{-4} which is not acceptable to EPA. As stated in our comments, an ELCR of 1×10^{-6} is the point of departure when determining acceptance of risk unless sufficient justification is provided. The Navy has not provided any justification for recommendations of no further action at sites with risks greater than 1×10^{-6} . In addition, as the recommendations presented will be revised in the Draft Final RI Report, based on the revised risk assessment submitted on February 28, 1996, we can not provide specific comments on the recommendations presented in this report. Meaningful comments on the recommendations can only be provided upon review of the Draft Final RI Report, which is being submitted concurrent with the Draft FS Report on May 1, 1996. We suggest that the Navy reach agreement with the Agencies on the revised recommendations prior to the May 1, 1996 deadline to avoid significant revision of the Draft FS Report. We would encourage the Navy to plan a workshop in early April to review the revised recommendations with all the team members.

The draft RI Report was also reviewed by EPA's Toxicologist, Hydrogeologist and data quality specialists. The comments

provided by the Toxicologist and Hydrogeologist are included however, they are very general based on the need for significant revisions to the document. Comments provided by our Data Quality Management Section are included in Attachment 2.

If you have any questions regarding these comments, please contact me at (415) 744-2387.

Sincerely,

A handwritten signature in cursive script, reading "Sheryl Lauth".

Sheryl Lauth
Remedial Project Manager

cc: Mr. Cyrus Shabahari, DTSC
Mr. Richard Hiatt, RWQCB
Mr. Jim Sickles, PRC
Mr. Bill McAvoy, Navy

THE ENVIRONMENTAL PROTECTION AGENCY COMMENTS REGARDING THE DRAFT
PARCEL B REMEDIAL INVESTIGATION REPORT, HUNTERS POINT ANNEX

GENERAL COMMENTS

1. There are a large number of typographic errors, awkward sentences, incorrect grammar, misspellings, "quoted notes," and incorrect chemical names. Individual sentences and paragraphs appear to have been "cut and pasted" even when not appropriate or germane to the area of contaminants being discussed. Much of the information appears to be copied directly from references with little or no understanding on the part of the author. In addition, there are many contradictory statements present in discussions of individual contaminants.
2. The scope of the removal actions should be discussed in greater detail in the RI Report. Specifically, the scope of the removal action should be consistent with recommendations presented in the RI for sites requiring evaluation in the FS (i.e. IR-6). In addition, please update the removal information to reflect the current status.
3. Results of the tidal influence study should be incorporated into the RI Report to support any discussions of dilution of groundwater when evaluating impacts to aquatic life (i.e. comparison of groundwater concentrations to AWQC). Please include isoconcentration maps of TDS values.
4. The point of departure for excess lifetime cancer risk is 1×10^{-6} . The only sites that can be recommended for no further action based solely on the risk number are sites with risks that are less than 1×10^{-6} . For those sites that fall within EPA's risk range of 1×10^{-6} to 1×10^{-4} the Navy must present adequate justification, which is currently not provided in the document, to support no further evaluation in the FS. The risk managers must then agree, based on the justification provided, that the site is suitable for no further evaluation in the FS. Any sites with risk higher than 1×10^{-4} should be recommended for further evaluation in the FS. Further, factors other than risk should be considered when making recommendations on which sites may require remediation. For example, the TCE concentration detected in soil at Site IR-10 is a threat to groundwater therefore this site should be retained for further evaluation in the FS.
5. EPA is not going to comment specifically on the recommendations presented in this report because they are based on the 0.5 acre human health risk assessment for residential use rather than the 2500 square feet exposure

area risk assessment submitted on February 28, 1996. As the Navy has agreed to revise the report recommendations based on the 2500 sq. ft. exposure area in the draft final report, we will comment on the recommendations at that time.

It should also be noted that if the Navy intends to present justification for no further action at the sites within the risk range, this will have to be presented and agreed to by the BCT prior to submittal of the FS which is due by May 1, 1996. If not, the Navy may have to go back and add sites with risk values in the risk range into the FS that they have not included in the draft submittal. We strongly suggest that the Navy provide the revised recommendations at a workshop in early April so that the team can agree on which sites should be retained for the FS prior to submittal of the draft final RI report and the draft FS both due on May 1, 1996.

6. The evaluation of the impacts of groundwater on aquatic life should be included in the RI Report rather than waiting for the Phase 1B ecological assessment results. The RI Report is intended to evaluate if the groundwater in Parcel B poses a risk to human health or the environment and should include recommendations for further evaluation in the FS Report, if appropriate. The Phase 1B investigation is intended to evaluate the impact to sediment and does not specifically evaluate risks from chemicals to aquatic receptors. Further, when the Navy evaluates the impact of groundwater on ecological receptors, if dilution is used as part of the evaluation, this must be supported by site data rather than simply stating that groundwater is diluted prior to discharging to the Bay. Storm drains have been shown as a significant pathway for groundwater migration to the Bay without dilution.
7. There are several data gaps that must be addressed before the Parcel B investigation is considered complete. These data gaps include, but are not limited to: the off-site investigation in IR-7/18, the DNAPLs present on Parcel B, the nature and extent of chromium VI contamination at Site IR-18, the vertical extent of contamination at Sites 10, 24, 25 and 26, and the removal of aboveground storage tanks, which is critical because the source of some contaminants may be a spill that was partially cleaned up by someone else.
8. The report is not organized according to the outline presented in and agreed to during the February 23, 1995 meeting. The current organization of the document makes it very difficult to follow. We would suggest the following revisions for the draft final. We recognize that these revisions may be time consuming, however, had the Navy

presented the information according to the original outline these revisions would not be necessary. In the future, we would appreciate it if the Navy would let the agency know ahead of time should agreements be changed.

- a. Revise the hydrogeology discussion as follows: provide a general discussion of Parcel B hydrogeology in Section 3 (Stratigraphy, groundwater flow, aquifer system etc.). The geology section, which only presents a series of figures, is inadequate. A complete discussion of geology is important because geologic features affect the fate and transport of contaminants. The discussion should progress from the regional geologic setting, to the geology of HPA and the immediate vicinity, to site specific geology. Information which should be discussed is included in Table 3-2 of the "Guidance for Conduction Remedial Investigations and Feasibility Studies Under CERCLA." At a minimum, the discussion of the regional setting should include a short description of the tectonic history and the evolution of depositional environments in the Bay Area. The discussion of the site geology should be written from a historical view point that relates the geologic units to depositional environments and the structural history of the area. The geologic discussion in Appendix C, which primarily describes the geologic units at Parcel B, should be integrated into this section (see comments on Appendix C). Produce and/or reference cross sections that illustrate the geology at each site. In the *Migration Evaluation* sections describe the geology in relationship to the site or buildings and potential source areas. Instead of describing maximum thicknesses of units, describe how the thickness of a unit varies across the site and how this affects/has affected contaminant transport.

A specific discussion by site should be included as follows: present a cross section for each site including concentration data (max hits or most significant concentrations with depth) and water level data, provide a table summarizing water levels, TDS and aquifer parameter data and provide groundwater contour maps. Then provide a brief discussion in the text to support this information (i.e. rely on the tables and figures as much as possible to get a conceptual model of the hydrogeology at the site and avoid a lot of text).

- b. Eliminate the general fate and transport discussion for each site and rely on Appendix O for this information. Provide a brief discussion of site specific migration pathway information (i.e. sumps, storm drains etc.) to support nature and extent discussion in relation to source information. For example,

- If drains or sumps are present, indicate where contaminants might be discharged. Inclusion of site-specific maps, cross sections, or diagrams rather than generic conceptual model diagrams would be helpful for visualization of potential migration routes.
- Indicate groundwater flow direction and downgradient receptors.
- Indicate ground elevations and potential surface runoff pathways for water and contaminants adsorbed to eroded soil.

Migration, solubilization, and volatilization rates as well as retardation, adsorption, and partition coefficients should be presented using site specific measurements or calculations. It appears that many of the parameters required to determine or calculate estimated migration rates, retardation, partitioning, or adsorption factors were not obtained or even considered during the RI process.

- c. Revise the nature and extent discussion to rely on a table showing the results of the screening against MCLs, AWQC, HPALs and PRGs, groundwater plume maps based on MCLs along with contamination vs. time plots for each monitoring well (an excellent example of how this information can and should be presented is provided by the PRC-prepared October 1995 Groundwater Status report for the Mare Island Naval Shipyard) and soil contaminant distribution maps based on 1×10^{-6} and non-detect values. The text as presented is of no real value. Relate the observed contamination to potential sources. For most sites and exposure areas, the sample location identifier and the maximum concentration of an analyte is given. Instead, the discussion should focus on the vertical and horizontal distribution of contaminants and should describe the contamination extent in relation to physical features and potential source areas. The distribution of all contaminants should be described, not just contaminants exceeding PRGs. By analyzing the distribution of all contamination, clues to the origins and migration pathways of contaminants are provided. If the discussions refer to exposure areas then include exposure areas on the contaminant posting figures. One suggestion is to combine the results discussion with the nature and extent discussion, using the table that presents the analyte concentration and screening values and adding a discussion on the extent of contamination.
- d. Revise the risk assessment discussion to rely on a table that presents the exposure area, sampling location, sampling depth, COPC, detected concentration and risk value. The discussion of what falls within EPA's acceptable risk range

is not appropriate. The discussion of land use is useful and should be used to support later recommendations for no further action sites.

9. The statement that the A-aquifer is a non-drinking water source must be better supported in the document. There are sites where the groundwater can be considered a potential drinking water source that are adjacent to other sites where drinking water pathways were not considered. How can the Navy ensure that this water is not commingling. There should be a consistent designation of groundwater for the entire parcel. For example, at sites IR-18 and IR-23, the A-aquifer can produce sufficient water and has TDS values less than the RWQCB criteria and is therefore considered a potential drinking water source. However, the HHRA did not evaluate this pathway nor is there any discussion of or recommendations based on contaminants detected above MCLs. This discrepancy must be addressed.
10. Why weren't shallow soil samples collected in unpaved areas of IR-24. How was future risk from dermal contact calculated without these data?
11. All references which are not available in open literature must be included in their entirety as an Attachment or Appendix. For example, (NOAA 1994). More reference citations should be included. The source of all geologic, hydrogeologic, climate, and soil data or information must be cited. Many reference citations in the text lack an identifying letter. For example, (HLA, 1994), when there were six HLA reports (a through f) completed in 1994.
12. The scaling of some figures appears to be inconsistent with the printed scale bar. Also, where possible, figures should be reprinted at the same scale so that they can be overlaid on each other. Incorrect figure numbers are cited throughout the text. Please go back through and correct the citations and make sure that the information claimed in the text is actually on the figure.
13. **Comments from EPA's Toxicologist.** In June of 1994, the project team assembled to review Parcel B site investigation data to determine the extent of contamination. At that time the gross contamination was identified and data gaps that could be rectified with further data collection were agreed upon. The anticipated result of this document was to further that investigation and succinctly report the conclusions. This report falls far from the mark and the cost associated with its production is a waste of valuable resources. The streamlined approach used in the site investigations (SI) was to screen detects against human health preliminary remediation goals (PRGs) which Region 9

has maintained and supplied to all parties. After discussion with the project team in October of 1995, it was agreed upon to additionally present the pathway of home-grown produce (as done for Parcel A after public comment) and to present area maps to define the accumulative risks in exposure areas across the parcel. Ultimately, all the parcel exposure area maps would be fused to produce a base-wide depiction of risk areas of concern. This report failed in several respects, first the presentation is confusing and redundant to the point that the document is almost useless other than as possible fire starter. The Navy's contractor, PRC, recalculated all the PRGs and in the process eliminated the exposures from dust which could be important at Hunter's Point. What PRC should do in the revision is to evaluate the PRG pathways, determine that the home-grown produce pathway needs to be added, calculate it and incorporate those results into the Region 9 PRGs to construct a Parcel B/ Hunter's Point specific PRG not start from scratch and charge the Navy to recalculate what was available and previously used in the parcel SI reviews.

The report did present the exposure unit maps in a useful manner. This is where the report organization is the most wasteful. The discussion of the exposure unit concept should be presented in the main text and then the risk summations presented on an exposure unit basis along with the maps. Continuing to segregate the report based on RI site numbers is confusing and detracts for the discussion. The historic presentation of the operations at each RI site needs to be presented as well as the sampling design to support the conclusion that samples were collected at the most probable areas of contamination. It would be sufficient to have the overlays of the SI and RI numbered sites and the cumulative exposure areas risk maps, as presented in Appendix P. However, the overall organization needs to be redone to logically present the conceptual model and conclusions in a manner that flows easily and allows the reader to understand the larger picture. The Navy also needs to decide if the 0.5 acre exposure units are necessary. We would suggest that the finer resolution of the 2500 ft² grids is more applicable for decision making and the 0.5 acre maps could be deleted.

The conclusions and executive summary must be reworked to include the 2500 ft² data and present management options for all areas that are presenting cumulative risks greater than 10⁻⁶ and HIs >1 for unrestricted land use i.e residential exposures. Clear discussion of the risk range and the advantages of the current risk presentation scheme must be added. The summation tables should include which risk scenarios were used, as is done on the area risk maps.

SPECIFIC COMMENTS

SECTION 1

1. **Section 1.1.1, pp 1-3 and 1-4.** This section would be more easily understood if all of the Parcel B activities were sequentially described. Instead, the text jumps between facility wide investigations, Parcel B activities and activities in other parcels. An approach which has been successful for other DOD facilities is to first present a facility-wide summary, then a description of Parcel B activities.
2. **Figure 1.3-4.** The significance of bolded numbers on this figure is not clear. Please explain why Parcel B sites 20, 23, 24, 25, 31, and 42 are not in bold type in the upper part of this figure. The figure should have a note or a legend that explains the meaning of bolded sites, asterisks, and dashed lines.
3. All sites in Table 1.3.1 should be depicted on figures. Sites SI-45, IR-46, IR-50, and IR-51 are not depicted on Figure 1.3.3. This could be accomplished in part by modifying Figure 3.1-1 to include the site numbers. A figure with the current and former transformer locations is also needed.

SECTION 2

1. **Section 2.1 and Appendix A.** The complicated history of investigations at Parcel B is poorly presented. In order to help the reader understand this history, add additional figures that show areas previously investigated along with the areas' original site number. For instance, a figure showing the Parcel B areas investigated under the IAS and confirmation study/verification step needs to be presented. Figures showing Parcel B sites investigated during other investigations also should be included. Figure 1.3-4 should be referenced in the text.

It would also be helpful to include a table which identifies when each site was investigated. For example, for a site, boxes for the IAS, confirmation study, and RI(95) might be checked. Each phase of field investigation should be included in the table.

2. **Section 2.2.3, pp. 2-6 and 2-7.** Please limit the discussion to activities which took place in Parcel B.

Appendix C is a brief summary of Parcel B hydrogeology, not a detailed discussion.

3. **Figure 2.2-1.** Provide the criteria used to define the area of direct tidal influence. It appears that the area of direct tidal influence could be extended in area IR -26. Monitor well IR26MW36A has a maximum water level change of 1.03 feet. This Figure and Figure 3.8-4 imply that groundwater in area IR-26 (as well as other areas) is not under direct tidal influence.
4. **Section 2.2.4 p, 2-7.** Measurement of facility-wide groundwater levels was last conducted in February, 1994. Tidal influence monitoring has been conducted but only to the extent to identify wells in which water levels fluctuate, not how that fluctuation would affect groundwater flow rate and direction. The report can only state that "a reversed hydraulic gradient may occur periodically and locally during high tide periods." Adequate quantification of the direction and rate of flow of groundwater during all seasons and under all temporal influences, such as tide and sewage pumping, is fundamental information that must be include in this RI. Without understanding flow, monitoring wells cannot be accurately located and contaminant concentrations cannot be accurately measured. The Navy need to better understand the influences of tide and seasonality on groundwater flow and contaminant transport.
5. **Section 2.3.3, pp 2-12 and 2-13.** Please limit the discussion of underground storage tanks to those within Parcel B.
6. **Section 2.4.2, p. 2-15.** A table listing all of the current and former transformers in Parcel B should be included in this section.

SECTION 3

General Comments

1. Many of these maps should be scaled to focus on Parcel B and not the entire site. Figure 3.7-1 is an example of a figure which successfully focuses on Parcel B, while figure 3.8-2 is an example of a figure which is not very useful for evaluating groundwater flow at Parcel B. It may be useful to present one figure which shows groundwater flow for all of HPA, but all groundwater contour maps (and several other maps) should be presented at the same scale as figure 3.7-1. This would help the reviewer/reader be able to read groundwater data and evaluate groundwater flow and would also enable the reader to overlay maps (for example, to examine the impact of the presence and absence of the Bay mud, or to evaluate the effect of the bedrock surface on groundwater flow.

Specific Comments

1. **Section 3.1.2, p. 3-2, paragraph 2.** Appendix A does not contain a detailed description of the utility system. Remove this reference.
2. **Section 3.1.3.** The referenced section, Section 2.3.3, contains programmatic level descriptions of the UST program that are not very useful in understanding the environmental conditions in Parcel B. This section (3.1.3) should contain a description of the UST removals in Parcel B (for example, size, content and condition of the USTs, extent of contaminated soil, etc.).
3. **Table 3.2-1.** This table would be more useful if it also included a description of the use of each building during the Triple-A tenancy period.
4. **Section 3.4, p. 3-4, paragraph 2.** For clarity, the sanitary sewer should be discussed in a separate paragraph.
5. **Figure 3.4-1, Topographic and Geologic Map.** The topographic lines on this map need review and cleanup. There are numerous lines which dead end or do not extend under buildings. For example, in the flat area with Qaf there are numerous 10 foot contours which dead end next to buildings. Remove, dash, query, or fix dead end lines.
6. **Figure 3.7-1.** Several data points are inconsistent with the contours (e.g., DMB25 and DMB21). Correct this figure.

Data points where bedrock was not encountered would provide information on minimum depths to bedrock. Please provide this information where possible. One recommended approach is to use less than signs and the elevation of the bottom of the borehole (i.e., < -21.3).

Several data points on figure 3.7-1 are not shown on figure 3.7-2. This is inconsistent because if a boring was completed at or in bedrock, the bay mud should either have been encountered or have been determined to be missing. Please explain the rationale for this. These figures would better compliment each other if they contained more of the same data points. An indication such as "M" for missing or "A" for absent could be used instead of an elevation posting when the Bay Mud Unit is absent.

7. **Figure 3.7-2.** Discuss the source of the information for existence and extent of the dredged area. It is not clear if this dredged area is based on historical information, boring lithologic data, or a combination of the two. Could the area with no Bay Mud be the result of scouring?

Contour line placement is not consistent with the posted data in the western most portion of the figure. For example, boring IR07B004 (-5.88) is closer to the -10 index contour than the IR07B007 (-9.42) boring (However, -9.42 is an erroneous value, see next paragraph). Another example is the IR07B001 (-2.95) boring which is situated on the -10 index contour and boring IR186027 (-10.05) which is not. Please correct the inconsistencies.

Boring IR07B007 is situated on the border of the shaded area which represents the absence of Bay Mud. The boring log indicates Bay Mud at approximately -5.42 feet below msl, not -9.42. Trace shell fragments generally indicate Bay Mud, as indicated in the boring log. A blow count of 50 should not normally indicate the presence of Bay Mud. Please explain the basis for this interpretation.

Post data points within the dredged areas to support the lack of Bay Mud.

8. **Figures 3.7-6 through 3.7-10.** The significance of the difference in line weights should be explained in the legend of these figures (for example, what is the significance of the light grey used for some borings and not for others). Label investigation area boundaries. Show the water table on all cross sections.
9. **Figure 3.8-1.** This figure appears to be a conceptual groundwater flow model for all of Hunters Point. Because this document is the Parcel B RI, outline Parcel B on this Figure. It would also be helpful to add Parcel B site boundaries. If it is not practical to add all of the Parcel B site boundaries, please include at least the sites with major groundwater contamination. For clarity highlight (shade) the area where tidally influenced groundwater occurs. Show the boundary between freshwater and saltwater ("saltwater wedge").

Bedrock and B-aquifer groundwater flow are excluded from Figure 3.8.1. This is contrary to Figure 4-2 as included in the 1994 base-wide hydrogeological report, which shows flow from the bedrock and B-aquifers to the Bay. Figure 3.8.1 also fails to depict the reversed direction of groundwater flow in the A-aquifer in the vicinity of Parcel B where under the influence of sewage pumping. Accurate, detailed and consistent conceptual model diagrams and narratives are essential to allow the reader to fully understand the complexity and vulnerability of the groundwater beneath Parcel B. As is, to understand these flow relationships, a reader must reference separate sections of the report to put the connections together. For example, on Page 4-48, the report states that "groundwater at IR-6 does not discharge

directly to the Bay, but rather filters indirectly through soils and sediments, finally reaching the Bay." However, review shows that when the maps for the groundwater levels (Figures 3.8-2, -3 and -4), fuel lines (IR-46) and the storm drains and sewer lines are overlain, a clear picture emerges for the potential of contaminated groundwater to discharge directly through these conduits to the Bay. We suggest the diagrams be reformatted to those multi-colored block diagrams prepared for other parcels for the conceptual model meetings that were held in the summer of 1994. Conceptual model block diagrams should overlay all contaminated areas with potential conduits and discontinuities such as seawalls.

10. **Section 3.8 and Figures 3.8-2 and 3.8-3.** These maps are not very useful because of the amount of detail and clutter. Much of the significance of the data is lost. There are also some contours which imply groundwater flow in improbable configurations. Examples are contours which imply internally draining systems or depressions in the groundwater surface. In some cases, this phenomenon may occur where the sewers intersect groundwater, but this is not explained in the text. Please rescale the maps to show just Parcel B and discuss all changes in flow direction or gradient. Changes in flow direction or gradient between measurement periods should also be discussed.

The average water level (or range of water levels across the time period during which the water levels were measured in the monitor wells) in San Francisco Bay should be included on these figures.

The heavy black line with the number 1935 should be included in the legend.

11. **Figure 3.8-4.** Please include the aquifer in which the measurements were taken in the title of this figure.
12. **Section 3.8, Bedrock Water Bearing Zone, pp. 3-8 and 3-9.** Please expand the discussion of the bedrock water bearing zone. Include the number of wells completed in this zone, whether groundwater flow is the result of primary or secondary porosity, groundwater flow direction and gradient, etc. See general comment #8 regarding document organization.

SECTION 4

GENERAL COMMENTS

1. The distribution of metals was frequently dismissed as "random." EPA disagrees with this approach, because there

is no evidence that a spatial analysis was done. The presentation solely of metals exceeding screening criteria on figures is misleading when considering spatial distributions. In order to successfully evaluate the distribution of a metal, all detections of each metal of concern must be plotted and patterns evaluated.

Many metals are dismissed because of a potential association with "serpentinite fill." This seems unlikely. The fill at Sites 7 and 18 was imported from another location in California. Given the total volume of fill required to fill in areas beyond the 1935 shore line, is it not likely that much of the fill was imported? Please calculate the volume of fill required, examine boring logs, and discuss likely sources of fill. Text in Section 4 should be revised as necessary.

Many metals exceed HPALs for soil but are still attributed to serpentinite in the fill. The ambient levels should account for high metals concentrations in serpentinite, otherwise the ambient levels are too low. In order to determine if these metals are naturally occurring, a more thorough analysis of the distribution of these metals must be made on a site by site basis. Describe the extent of metals exceeding HPALs in soil at each site. Justify why the described pattern indicates why these metals are naturally occurring. Areas with more than one metal exceeding its HPAL should also be analyzed. Collocated metals can provide evidence of the origin of the contamination. For example, some groups of metals are associated with paint while other groups of metals are associated with batteries and electrical systems. Areas of contamination exceeding PRGs can be described after the extent of metals exceeding HPALs is described.

7. The nature and extent of contaminants in groundwater sections also need to be expanded. The vertical, horizontal, and temporal trends in the data must be described. In most cases, the posting maps (the plates of Figure 4.0-4) are inadequate. Maps involving a greater amount of interpretation need to be produced. Figures showing the extent of contamination must be produced. Typically, this is done with a "plume map" (the Figure 4.0-4 sheets would provide a good base map). Plume maps have been created for the BCP and it is important to provide them for decision makers to use. Show the groundwater flow direction on these figures. Contaminants may be represented singly or as groups.
8. Since no HPALs for metals in groundwater were calculated, determining if metals contamination is present in groundwater is difficult. The descriptions of metals

groundwater data must be expanded. The description should include a description of the vertical, horizontal, and temporal variations in concentrations. Only after such a description can the validity of attributing high metals concentrations be assessed.

9. In many instances contaminants shown in the posting boxes on the Figure 4.0-4 sheets are listed twice. Also, both primary and duplicate sample results are listed. To save space list an analyte only one time in each posting box and list only the maximum concentration of the primary or duplicate samples.
10. The presentation of information about PCBs in the *Persistence in the Environment* and *Migration Evaluation* is inadequate. These discussions must be expanded because PCBs are present at many sites at high concentration in several media., and have migrated to depths greater than 16 feet.
11. Whenever discussing sampling locations, reference the appropriate figures which show the sampling points. An example is Section 4.9.1, soil characterization. Several references are made to specific borings, but the reader has not yet been introduced to figures which show these sampling points.
12. List all samples in the soil analytical data boxes on the Figure 4.0-3 sheets even when criteria were not exceeded. For example, on Sheet 10 barium, lead, and manganese results for location IR26B033 are listed for two samples (6.25 ft and 21.25 ft). If the reader is unaware that four other samples were collected at this location they may erroneously conclude that contamination is present from 6.25 ft to 21.25 ft. It would be much more useful if the results for these three analytes were listed for all samples collected at this location and if results below screening criteria were flagged. This would illustrate the isolated occurrences of screening criteria exceedances at this location.

Also, show sample depths at locations where no screening criteria were exceeded, thereby allowing the reader to estimate a lateral extent of contamination. The note indicating that bold station labels without data boxes indicate that analytes were not detected at concentrations exceeding screening criteria is incorrect. For example, on Figure 4.0-3, Sheet 6 IR62B001 is bold with no data box. However, lead was detected at a concentration exceeding the HPAL at this location.

Similarly, on the Figure 4.0-4 sheets, blank spaces in the groundwater results data boxes are the result of either the compounds not being detected at concentrations exceeding

screening criteria or the result of analyses not being performed for the compounds. Fill in the blank spaces with either NA (not analyzed) or results flagged as below screening criteria.

When possible place data boxes closer to sample locations and block out background features.

Improving the analytical posting figures, will facilitate evaluating whether metallic analytes are naturally occurring or are the result of a release.

13. The tables presented in the text would be more useful if the number of samples exceeding HPALs or PRGs were specified, rather than percentages. This is done for groundwater (number of wells), but not for soils. This would make the presentation easier to understand, because 30% of 10 samples is 3, but 30% of 100 is 30. Thirty detections above HPALs suggests there is likely a spatial pattern.
14. Provide additional information about the geophysical survey. Discuss methodology used and provide results on figures and/or tables. If this information is available in another document, reference that document. Otherwise the sections which present geophysical results should be expanded.
15. The Recommendations should include a discussion of data gaps and indicate whether a site is being carried forward into the FS or not and, if not, why not.
16. Examination of Figures 3.8-2 through -4 clearly show a sink in the water table between IR-6 and IR-25 at the confluence of the fuel, steam, storm, and sewer lines. This implication of a potential drain for IR-6 contaminants to travel directly the Bay or in a direction toward the sewage treatment plant, is not discussed in the document.
17. Flow rates are calculated through porous media yet maximum rates would certainly be accommodated through conduits such as sewer pipes. The rate of flow through the pipes should be presented in each of the IR-specific discussions of migration pathways.
18. The text incorrectly references Figure 4.11-4 as the "distribution of TCE in groundwater." Figure 4.11-4 shows instead the maximum vinyl chloride concentrations. Figure 4.11-5 was not included in the documents submitted to EPA. This figure is of utmost importance because it should depict the highest groundwater contamination levels in all of Parcel B where areas of DNAPL contamination potentially intersect conduits such as storm drains.

19. The sewer system description needs to be consistent. On page 4-505 it is described as "generally located above the static groundwater levels" and on 4-520 it is described as "largely below static groundwater levels."

Specific Comments

1. **Section 4.0, p. 4-2.** The approach to use duplicate samples is not conservative. Normally, when one sample has a detection and the other does not, the detected value is used. This is particularly relevant for soils which are non-homogenous.
2. **Section 4.0, p. 4-5, paragraph 1.** Provide justification for the methodology used in translating the petroleum hydrocarbon screening concentrations from soil to groundwater.
3. **Section 4.1, p. 4-10.** Figures 4.1-1 through 4.1-23 are presented with minimal discussion. Add a description and interpretation of the distribution of each metal. Include references to each figure.
4. **Section 4.1, p. 4-10.** (HLA, 1994) is not a complete reference. There are six HLA reports that were completed in 1994. Add the letter designation to the citation.
5. **Section 4.3.3.2, p. 4-38, last sentence.** The reason given for attributing bis(2-ethyl hexyl)phthalate to laboratory contamination is unacceptable. This claim could be made if there was blank contamination or if there is no reason to suspect that this compound is a site contaminant.
6. **Section 4.4.5.1, p.4-49 to 4-50.** The discussion in this section lists locations of contaminant detections and does not attempt to discuss the extent of contamination. Discuss the spatial distribution of contaminants including whether there are patterns or isolated hot spots. If there isn't enough data to make these conclusively, identify the data gap.
7. **Section 4.4.5.1, p. 4-49, paragraph 1.** Explain in more detail why elevated concentrations of beryllium, chromium, manganese, and nickel are attributable to bedrock. Discuss the metals found in serpentinite. Lead and cobalt were not listed in Table N.5-3 of the HHRA. Why are these metals listed here?
8. **Section 4.4.5.2.** Generally, this section does not attempt to discuss the extent of contamination. Instead, locations of contaminant detections are listed. Rewrite the

discussions with an approach that focuses on plume identification and extent. Discuss the relationship between contaminants detected in the A aquifer and those found in soil, and between the A and bedrock aquifers. To aid in the interpretation of the data, produce plume maps for individual or groups of contaminants. Integrate groundwater analytical data from neighboring sites into plume maps. The introduction to the section states that Figure 4.0-4, sheet 5 shows the maximum extent of affected groundwater. However, data is only posted on this figure and determining the extent of contamination is currently left up to the reader. See General Comment #8.

Metals detected in the A-aquifer or bedrock groundwater are dismissed as the result of a non-point source. What are the likely sources of the metals? Why are the distributions of metals in bedrock discussed and not the distributions of metals in the A-aquifer? Is there any relationship between metals detected in groundwater and those detected in soil?

9. **Section 4.4.6.2, p. 4-63, paragraph 2.** Vinyl chloride is produced mainly by biodegradation of cis-1,2-DCE. Formation of vinyl chloride from trans-1,2-DCE or 1,1-DCE is only a very minor pathway.
10. **Section 4.4.6.3, p. 4-67, Pesticides.** It is stated that heptachlor epoxide was detected in groundwater. The next sentence states that this compound is insoluble in water.
11. **Section 4.4.7.1, p. 4-70.** Include a discussion of data gaps. For example, the extent of PCBs north of borings IR06B031 and IR06B039 is not known. The vertical extent of PCBs in the IR06B039 has not been determined.
12. **Section 4.5, General Comments.** The B aquifer was not sampled at this site because the Bay Mud aquitard, which is 31 ft to 55 ft bgs, protects the B aquifer from possible contamination. However, in the southeast portion of the site, there appears to be no Bay Mud aquitard. Furthermore, some Bay Mud deposits are described as less than 1-foot thick. Therefore, the B aquifer could be contaminated. Please explain this discrepancy and the rationale for not evaluating the groundwater in the B aquifer.
13. **Section 4.5.6.2, p. 4-107, paragraph 3.** "SVOCs have a very low solubility in water and are considered hydrophobic compounds." The correct class of compounds may be PAHs. Phenols are a subset of SVOCs which are hydrophilic and exhibit high solubilities depending upon pH.
14. **Section 4.5.6.3, p. 4-110.** This sentence is an oversimplification and may not be true if solvents or

petroleum hydrocarbons are present. Expand the discussion.

15. **Section 4.6.2.1, p. 4-134, paragraph 1.** The beginning of the paragraph states that Bay Mud is present at the site. However, the paragraph goes on to state that Bay Mud was removed from the site by dredging operations. Please clear up this discrepancy.

A more in depth description of the geology is needed. How does the depth of the bedrock vary across site? Are there any discernable patterns in the stratigraphy of the fill? If Bay Mud is present, what is the areal extent of the unit and how does its thickness vary across the site? A thorough understanding the geology is needed because the geology may significantly affect the migration of contaminants at the site. See general comment #8.

16. **Section 4.6.3.1, p. 4-138, Metals Table.** Change the percent of samples exceeding the PRG for lead to 100%.
17. **Section 4.6.3.3, p. 4-144, paragraph 1.** The magnitude of the Hydropunch detections should also be discussed. For IR10B037 and IR10B035A, all results discussed in this paragraph should be posted on Figure 4.0-4, Sheet 3.
18. **Section 4.6.5.1, p. 4-150, paragraph 3.** Only Figure 4.0-3, Sheet 6 shows the analytical results for IR-10. Delete the reference to Sheet 5.
19. **Section 4.6.5.1, Metals in Soil.** The opinion that the detected metals are not attributable to a release seems to be based solely on the frequency and magnitude of HPAL exceedances. A spatial analysis of the data must also be conducted to determine if this is a reasonable explanation. Describe the distribution of metals that exceed HPALs at IR-10. Were the samples with high concentrations of metals collected near potential sources or in a pattern that suggests a release? Arsenic, barium, cobalt, copper, manganese, selenium, and vanadium were also detected at concentrations exceeding HPALs.
20. **Section 4.6.5.1, p. 4-152, paragraph 1.** The last sentence cites ELCRs as evidence for the source of the release. The source of the release is independent of the ELCR. Describe the source of the release based on analytical data and historical information on solvent use.

Since the analytical data is referenced to exposure areas, add exposure areas to Figure 4.6-5.

21. **Section 4.6.5.1, p. 4-152, paragraph 2.** Apparently, only one sample location at IR-10 had concentrations of SVOCs

exceeding PRGs. However, the third sentence implies that other samples contained concentrations of SVOCs exceeding PRGs. Expand the discussion to include descriptions of these sample locations.

22. **Section 4.6.5.2, p. 4-153, paragraph 3.** Chromium VI concentrations are higher than total chromium concentrations. Explain this anomaly. Also, the ranges of concentrations cited should not be described as "consistent."
23. **Section 4.6.5.2, p. 4-154, paragraph 1.** The text states that TCE extends downgradient past well IR10MW13A1; however, Figure 4.6-6 shows that the maximum detected concentration of TCE in this well is ND. Explain this discrepancy.
24. **Section 4.6.5.2, p. 4-154, paragraph 2.** The text states that NAPLs concentrate at the top of the water table. This statement is true only for LNAPLs like gasoline. DNAPLs like TCE are denser than water and tend to migrate down into the aquifer. Therefore, this information is irrelevant to the discussion of TCE results. Include a discussion of the extent of other VOCs in groundwater. Compare the extent of TCE with TCE breakdown products. Relate the occurrence of TCE to likely source areas, groundwater flow directions, and the topology of the Bay Mud and bedrock surfaces.
25. **Section 4.6.5, p. 4-155, paragraph 2.** TCE was commonly used as a degreasing agent for metal plating operations, so there is a potential relationship between TPH and TCE detections in groundwater. One would normally expect to see heavier petroleum compounds associated with degreasing operations. What other data have been collected to refine this statement?
26. **Section 4.6.6.2, p. 4-156, paragraph 1.** "... some metals may change the compounds they are combined with ..." Metals do not "change the compounds they are combined with ". Instead they may form new compounds depending upon other pH, redox potential, and other species present in solution.
27. **Section 4.6.6.4, p. 4-158, paragraph 2, last sentence.** The distribution of TCE in groundwater shows that TCE has already migrated "away from the point of release." Soil can be affected by volatilization from groundwater. Delete or revise this misleading sentence.

TCE adsorbed to soil can also be transported to groundwater by dissolving into infiltrating water.

28. **Section 4.6.7.1, p. 4-162.** There are no wells close to locations IR10B036 and IR10B035A to evaluate the potential

presence of DNAPL. Identify this as a data gap.

29. **Section 4.7, p. 4-170.** Discuss the history of the site, including what activities are likely responsible for the contamination. Describe the area northwest of the site. Are there any potential off-site contaminant sources in this area?
30. **Section 4.7.5.** Expand the descriptions of the vertical and horizontal extent of contaminants. Include discussions of potential off-site source areas for the contamination. Discuss additional RI activities planned for the off-site area north and northwest of the site, including the implication that a data gap exists in this area. If the extent of contamination towards the north or northwest of the site is not known, include this information in the extent of contamination descriptions.
31. **Section 4.7.5.1, p. 4-190, paragraph 2.** Add TOG results to figure 4.0-3, Sheet 2. Describe the area where SVOCs were detected in more detail.
32. **Section 4.7.5.1, p. 4-191, paragraph 4.** Describe the vertical and horizontal distribution of PCBs in soil.
33. **Section 4.7.5.2, Metals in Groundwater.** Describe the patterns of detection for each metal detected at concentrations exceeding screening criteria. Also discuss whether there is a relationship between metals detected in soil and metals detected in groundwater.
34. **Section 4.7.7.1, pp. 4-200 to 4-201.** Include discussion of data gaps. For example, the extent of SVOCs and PCBs has not been determined northwest of the site boundary.
35. **Section 4.8, p.4-208, paragraph 1.** Use of the facility prior to 1986 is discussed. Were there any other subsequent uses of this facility and the adjacent storage yard? The storage area is described prior to 1986, but the uses of building 156 are not described. Describe any uses of building 156 prior to 1986.
36. **Section 4.8.1, p. 4-211, top paragraph.** Describe the other water-bearing zones mentioned in this section. If the text is referring to the B-aquifer please so state. Explain the rationale for not sampling other water bearing zones.
37. **Section 4.8.2.1, p. 4-212, paragraphs 4 and 5.** Paragraph 4 states that the Bay Mud deposits were removed. Paragraph 5 describes borings where Bay Mud was encountered, and the Bay Mud aquitard is described as a 3 foot thick unit. It appears that the Bay Mud deposits were partially removed. Clarify

the presence of the Bay Mud aquitard at this site.

38. **Section 4.8.2.1, p. 4-212, paragraph 5.** Clarify the description of the depth to bedrock.
39. **Section 4.8.2.1, p. 4-212, paragraph 5.** The reference to Figure 3.6-4 is incorrect. Figure 3.6-4 is not listed as a part of this report. Please refer to the correct figure which shows borings and monitoring wells in relation to the Bay Mud aquitard as discussed in this paragraph.
40. **Section 4.8.5.1, p. 4-233, paragraph 1.** Discuss how Aroclor 1260 contamination reached a depth of 16 feet bgs since PCBs are not generally mobile.
41. **Section 4.8.5.2.** Locations of contaminant detections are listed. Describe the extent of groundwater contamination by individual or groups of contaminants. Integrate groundwater analytical data from neighboring sites into plume maps, if appropriate. This approach would provide a visual description of the nature and extent of the contamination.

If there are cross sections which show the groundwater at this site, reference them in this section.

42. **Section 4.8.6.1, p. 4-235, paragraph 4.** This paragraph does not address the issue of PCBs, which were detected in sludge, concrete samples, and soils to a depth of 16 feet. Discuss how PCBs reached a depth of 16 feet.

A figure describing the potential mitigation pathway, with groundwater flow direction, would be more suitable for this discussion than referencing cross-section L-L' (Figure 4.6-1). One way to present this data is to provide plume maps which overlay the cross-section.

43. **Section 4.8.6.3, p. 4-238, paragraph 1.** PCBs are insoluble, so it is incorrect to state that they will be mixed and diluted with groundwater. Also, correct the typographical error.
44. **Section 4.9, p.4-247, paragraph 3.** The information about the production or storage of hazardous substances at Building 146 should be introduced on p. 4-246, where Building 146 is introduced. This would provide a better description of the sources of contamination at this location.
45. **Section 4.9.2.1, p.4-251, paragraph 3.** Please refer only to the cross sections which show borings located in IR-23.
46. **Section 4.9.2.1, p.4-251, paragraph 4:** If the depth of the

Bay Mud deposits is unknown at Building 121, Figure 3.7-2 should show a queried line at this location.

47. **Section 4.9.2.1, p.4-252, paragraph 1.** Show more cultural features, on Figure 3.8-1, (e.g., buildings with numbers) so that this figure may readily used for the discussions which reference it.
48. **Section 4.9.7.1, pp. 4-279 to 4-280.** Include a discussion of data gaps. The horizontal extent of SVOCs in subsurface soil north of IR23B010 is not known.
49. **Section 4.10.** IR-24 soil data is posted on three different sheets of Figure 4.0-3. Consolidate IR-24 posting on to one sheet.
50. **Section 4.10, p. 4-290.** Please refer to a figure which shows the location of the buildings at the site, as well as the location of the former Building 124.
51. **Section 4.10, p. 4-291, paragraph 1.** This paragraph discusses the presence of hazardous substances in soil and groundwater samples which were assessed during an area study. Only the soil boring sampling locations and general results are presented; the groundwater sampling is excluded. Please clarify if there were wells installed and present the data collected during this area study, and if appropriate, the report which discusses this data.
52. **Section 4.10.3.1, pp. 4-299 to 4-300, PCBs.** Please provide the range of PCB detections for all samples discussed in this paragraph, including those detected at locations associated with IR-25, IR-46, and IR-51.
53. **Section 4.10.4.2, p-310, paragraph 1.** The statement "groundwater at IR-24 does not discharge directly into the Bay..." is not necessarily true. Figures 3.8-2, 3.8-3, and 3.8-4 strongly suggest that groundwater is discharged directly into the Bay. Revise this statement.
54. **Section 4.10.5.1, p. 4-311, Metals in Soil.** EPA disagrees with the statement that the distribution of metals in soil is random. There are areas where all borings appear to have elevated levels of certain metals. The distribution of metals must be reexamined. This pattern would be more clear if, for metals of concern (those metals where the screening criteria was exceeded), all detected values were posted.
55. **Section 4.11, p. 4-343, paragraph 1.** Reference a figure that shows the location of IR-25 and Building 134 and the sample locations and features (e.g., sump and dip tank)

discussed in this section.

56. **Section 4.11.1, p. 4-344, last 2 paragraphs.** The text suggests that one sludge sample and one liquid sample were collected from the dip tank and that one sludge and one liquid sample were collected from the sump, however, Tables 4.11-1, 4.11-2, and 4.11-3 only identify two samples. Further, the tables identify these as sludge samples, while the text on page 4-344 identifies these as liquid samples. Please correct this discrepancy. If there were four samples, provide the missing data.
57. **Section 4.11.2.1, p. 4-347, paragraphs 1 and 5.** Only reference cross sections specific to IR-25 and reference a cross section that illustrates the hydrogeology at IR-25.
58. **Section 4.11.5.1.** In the discussion of the results describe the areas of contamination and the locations of samples. Specifying an exposure area is not an adequate description, especially since exposure areas are not shown on Figure 4.0-3, Sheet 8. A general area is specified at the beginning of some contaminant group discussions (e.g., Volatile Organic Compounds in Soil). However, specific data is never related back to that feature. Expand the text so that specific data is discussed in relation to potential sources or physical features. Show source areas, i.e., sumps and dip tanks, on the contaminant posting figures.
59. **Section 4.11.5.1, p. 4-372, paragraph 3 and Section 4.11.5.2, p. 4-375, paragraph 3.** Describe in detail the distribution of individual metals and why they can be attributed to a release or to a natural occurrence.
60. **Section 4.11.5.1, p. 4-372, paragraph 4.** Describe the location of sample PA25SS04 in relation to potential contamination sources.
61. **Section 4.11.5.1, p. 4-373, paragraph 1.** The distribution of antimony is discussed in relation to exposure areas. Add exposure areas to Figure 4.0-3, Sheet 8. Describe the pattern of detection that indicates that antimony and nickel are associated with serpentinite-derived soil.
62. **Section 4.11.6.1, p. 4-379.** Present concentrations which suggest the presence of a DNAPL and discuss their significance; i.e., compare concentrations to solubility limits taking into account differential solubilities for components in the liquid phase solvent mixture. If DNAPLs and LNAPLs are present, immediate interim corrective measures should be considered to stabilize the area and prevent further migration.

63. **Section 4.11.6.2, p. 4-381, paragraph 1.** The presence of pentachlorophenol indicates wood treating was performed. Chlorinated dibenzodioxins and furans are present in pentachlorophenol at relatively high concentrations as contaminants from the PCP manufacturing process. In addition, as PCP treatment oil is heated with use, additional dioxins are formed. Samples from this area must be analyzed for dioxins and furans by high resolution GC/MS (Method 8290). Sludges from wood treatment are RCRA listed wastes and must be treated as such.
64. **Section 4.11.6.3, p. 4-382, PCBs.** Expand this discussion. Because PCBs have been detected at concentrations up to 800,000 $\mu\text{g/kg}$, this single sentence is inadequate.
65. **Section 4.11.6.3, p. 4-383, VOCs.** If DNAPLs and LNAPLs are present, immediate interim corrective measures should be considered to stabilize the area and prevent further migration. Indicate where the sewer line empties and what environmental receptors may be present.
66. **Section 4.11.7.1, pp. 4-386 and 4-387.** The presence of pentachlorophenol at 50,000 $\mu\text{g/kg}$ strongly suggests that dioxins were present in the dip tank. Dioxins could have been released to the environment, yet no analyses for dioxins or furans were conducted. The risk at this site would be significantly different if dioxins are present. Identify this as a data gap.
67. **Section 4.12.3.5, p. 4-410.** Include the range of TCE and vinyl chloride detections that exceeded the PRGs and MCLs in the text.
68. **Section 4.12.5.1.** Describe contamination in relation to physical features and potential source areas in more detail. Show exposure areas on Figure 4.0-3, Sheet 10.
69. **Section 4.12.5.1, pp. 4-416 and 4-417.** Describe the distribution of all metals exceeding HPALs.
70. **Section 4.12.5.1, p. 4-417, last sentence, VOCs in Soil.** The detected concentration of TCE was 21,000 $\mu\text{g/kg}$. Please correct.
71. **Section 4.12.5.2, p. 4-420, paragraph 1.** Manganese was detected at a large number sample locations in the vicinity of Building 157. This does not appear to be a random distribution as suggested in this paragraph. Explain in more detail why the detected manganese is not the result of a point release.

72. **Section 4.12.7.1, p. 4-425.** There are no wells to evaluate the extent of TCE in groundwater near IR26B024. The Hydropunch sample from this area was collected at a shallow depth (10.25 feet). Identify the lack of monitor wells as a data gap.
73. **Section 4.13.5, p. 4-446, paragraph 5.** State the possibility that the pattern of lead detections described could indicate a small release in the vicinity of IR42B009.
74. **Section 4.14, General Comment.** Discuss results of investigations of the fuel line extending from Building 146 to the waterfront. If this area was not investigated state this and discuss any future investigations planned for this fuel line.

Based on Figure 3.7-4 many IR-46 samples were collected at locations apparently not associated with the fuel lines. The description of the investigation does not clarify why this was done. Expand the description of the rationale for choosing sample locations.

75. **Section 4.14, p. 4-456, paragraphs 1 and 2.** Reference a figure that shows all of the features discussed in this paragraph, including both sets of fuel lines; Berths 55, 56, 57, 58, 60, 62, and 64; Drydock 7; tank farm; booster pump; and Buildings 130 and 146.
76. **Section 4.14.1, p. 4-458, paragraph 2.** Two IR-46 soil borings are discussed. However, based on Table 4.14-3 more soil borings were completed at this site. Give a complete description of IR-46 soil characterization.
77. **Section 4.14.2.1, p. 4-460, last paragraph.** The sixth sentence does not make sense. If the thickness of the Bay mud is 1 to 4 feet how can the maximum thickness be unknown?
78. **Section 4.14.2.2, p. 4-472.** Explain the statement "groundwater at IR-46 does not discharge directly into the Bay..." when Figures 3.8-2, 3.8-3, and 3.8-4 strongly suggest that groundwater is discharged into the Bay.
79. **Section 4.14.5.1, p. 4-473, paragraph 4.** Figure 4.0-3, Sheets 3, 4, and 5, do not show all the results for IR-46. Produce and reference a single figure that shows the IR-46 sample results and fuel lines. All sample results relevant to IR-46 should be posted on a single map. Sheet 7 shows most of the sample results for IR-46; however, results relevant to IR-46 of samples collected in the IR-25 and IR-6 areas are not included.
80. **Section 4.14.6.2, p. 4-480, paragraph 1.** Provide references

for the cited aerobic degradation of PCBs. There is little credible evidence in the literature for aerobic degradation of PCBs. The required ring-cleavage reaction is extremely slow.

81. **Section 4.14.6.3, Page 4-480, paragraph 2.** PAHs and Aroclor-1260 associated with releases of petroleum hydrocarbons would migrate with (dissolved in) the petroleum phase and would not behave as individual compounds. Therefore, these compounds would not be expected to sorb primarily to near surface soil and be immobilized.
82. **Section 4.15, p. 4-484, paragraph 3.** Two of the interconnections are not discussed in Section 4.15.2. Please add this text, or change the sentence on page 4-484.
83. **Section 4.15, p. 4-485, paragraph 2.** The two sentences referencing the storm drain system in Area C are contradictory. It appears that the second sentence should reference Area D.
84. **Section 4.15.1, p. 4-494, last paragraph.** Please explain why the Navy believes lead may have a non-point source origin. This explanation should include a discussion of source areas and levels of lead in soil and groundwater. It may be helpful to contour all detected concentrations of lead in each media to obtain a site- or parcel-wide picture of lead contamination and hot spot locations. These hot spots (in soil and groundwater) can then be compared to Figure 4.15-2.
85. **Section 4.15.5.** The location of catch basin PA50CB200 is unclear on Figures 4.15-2 and 4.15-3. If the catch basin is located on the short spur north of Building 113 then attributing the PCBs, TPH, and TRPH detected here to the tank farm is questionable. Clearly mark the location of catch basin PA50CB200 on Figures 4.15-2 and 4.15-3. Also mark the location of PA50SW218 on Figures 4.15-2 and 4.15-3.
86. **Section 4.15.6.1, p. 4-499 and Section 4.15.6.3, p. 4-500.** Which area received waste liquids from the floor drains in Building 125 (IR-8)? Has any attempt been made (for example, dye studies) to determine where the floor drains discharged?
87. **Section 4.16.2, pp. 4-509 and 4-510.** This section is difficult to follow without figures illustrating the groundwater table features described in the text. Reference groundwater contour maps that show the water table in detail (see Section 4 General Comment 3). Include the sanitary sewer on the groundwater table map. Label sections of the sewer line with suspected groundwater or tidal influence.

88. **Section 4.16.2, p. 4-510, paragraph 2.** To support the assertion that tidal inflow is occurring, present the analytical data for sewer water at PA50SN206, groundwater at PA50MW01A, and bay water in a table.
89. **Section 4.16.6.1, p. 4-521, top of page.** Include a discussion of the potential for groundwater to enter the sewer system. Support the discussion with a comparison of analytes and concentrations.
90. **Section 4.17.7.2, p. 4-535.** Unless a removal is planned under the EE/CA process, the recommendation should be to include this site in the FS.
91. **Section 4.18.2.1, p. 4-539, paragraph 4.** The depths of units listed in this section do not match cross section G-G'. The descriptions in this section appear to apply to Parcel B in general. Describe the thicknesses and depths of geologic units at IR-60.
92. **Section 4.18.2.1, p. 4-540, paragraph 1.** Two rounds of groundwater samples were collected from three monitor wells at IR-60. Why are groundwater levels not available? If groundwater levels are not available use information from nearby wells to estimate hydrogeologic properties at IR-60.
93. **Section 4.18.4.2, p. 4-550.** Provide evidence for the statement "groundwater at IR-60 does not discharge directly into the Bay..."
94. **Section 4.18.5.1, p. 4-552, paragraph 4.** Describe the distribution of elevated lead concentrations in more detail. Lead concentrations appear to peak at approximately 10 ft below the ground surface in several borings in the vicinity of IR60B003. A more thorough description of the distribution may provide clues to the origin or migration pathway of the lead contamination.
95. **Section 4.18.5.2, p. 4-554, Metals in Groundwater.** The text implies that the frequency and magnitude of metals in groundwater at IR-60 exceeding PRGs, MCLs, and NAWQC is similar to the pattern seen across Parcel B. Provide the statistical data that supports this assertion.
96. **Section 4.18.6.3, p. 4-558, paragraphs 1 and 4.** The last sentence in these paragraphs states that petroleum hydrocarbons will remain in place (or not migrate far), yet the first bullet on page 4-560 states "the potential for the migration of petroleum hydrocarbon constituents into the Bay is high." Resolve this discrepancy.
97. **Section 4.18.7.1, p. 4-559, paragraph 3.** Only lead is cited

in Section 4.18.5.1 as a potential metal contaminant in soil and only manganese is cited in Section 4.18.5.2 as a potential metal contaminant in groundwater. Section 4.18.7.1 cites several other potential metal contaminants. Resolve this discrepancy.

98. **Section 4.19.5.2, p. 4-579, paragraph 3.** Please discuss the occurrence of manganese in groundwater in exceedance of screening criteria. Describe the source of the manganese. Manganese is not discussed in the Migration in Groundwater section, p. 4-582, or the Conclusions.
99. **Section 4.19.7.1, p. 4-582, Site Characteristics and Potential Sources at IR-61.** The point source for soils is not well defined. Did the contamination originate from surface spills at the electrical substation? What activities at the electrical substation resulted in the contamination discussed in this section?
100. **Section 4.20, p. 4-591.** Reference a figure that shows the features listed in the site description (buildings, USTs, concrete sump, and transformer shed).
101. **Section 4.20.2.1, p. 4-596, paragraph 2.** Estimate the hydraulic gradient at IR-62 using the Parcel B groundwater contour maps.

SECTION 4 - FIGURES

1. **Figure 4.0-2.** Specify that this comparison applies only to soils, either in the title or legend.
2. **Figure 4.0-3, Sheet 1.** Post soil analytical data exceeding screening criteria at IR07B001, IR07B008, and IR07B030. Label the Sandblast Fill, Additional, and Painting Areas.
3. **Figures 4.0-3 and 4.0-4.** Show the boundaries of IR-62 on these figures (including the key map inset).
4. **Figure 4.0-4, Sheet 2:** This figure designates levels of manganese exceeding the MCL value. Table 4.19-5 does not show an MCL value for manganese. Please provide the MCL, or explain this omission.
5. **Figure 4.0-4, Sheet 3.** In several instances posted data is unreadable because it overlaps sample locations. Block out map information behind posted data.
6. **Figure 4.0-4, Sheets 3 and 4.** Show the fuel lines on these figures.
7. **Figure 4.0-3, Sheet 4.** Post Aroclor-1260 results at

IR61B009. Provide site outlines and shade sites IR-61 and IR-62.

8. **Figure 4.0-4, Sheet 5.** Review the figure and combine rows in data posting boxes where appropriate. Indicate the groundwater flow direction on the figure. Reproduce this figure at a smaller scale on the same size sheet (see comment on Figure 4.0-3, sheet 9). Removing soil sample locations would make this figure much less crowded.
9. **Figure 4.0-3, Sheet 6.** Post analytical data exceeding screening criteria at IR42B007, IR42B008, IR42B009, and PA42B001. Post data exceeding screening criteria at IR10B005, IR10B006, IR10B007, IR10B020, IR10B031, and IR10MW31A1. Correct the spelling of cis-1,2-Dichloroethene in the IR10MW13A1 posting block (perhaps cis-1,2-DCE could be used if space is a concern).
10. **Figure 4.0-3, Sheet 7.** Post data exceeding screening criteria at IR20B013.
11. **Figure 4.0-3, Sheet 9.** Produce a smaller scale map for this sheet since the IR-06 site takes up only a small portion of the sheet. The posted analytes will be much easier to associate with a sample location when the map is produced at a smaller scale on the same size sheet. Since Section 4.4.5.1 references this figure and relates the nature and extent of contamination to exposure areas, show exposure areas on this sheet.
12. **Figure 4.0-3, Sheet 10.** The concentration of lead in the 11.25-foot sample from IR26B010 and in the 1.25-foot sample from IR26B013 do not match the concentrations listed in Table 4.12-9. Correct the discrepancies.
13. **Figure 4.0-3, Sheet 10.** Post data exceeding screening criteria at IR20S001 and IR20S002.
14. **Figures 4.5-3 and 4.5-4.** There are numerous sampling locations indicated on these figures which do not have corresponding data or explanations. Add the missing information.
15. **Figure 4.4-6.** Label the unit between Qaf and sp. Explain the significance of the shading.
16. **Figures 4.4-6, 4.4-7, and 4.4-8.** Show the groundwater table on these figures.
17. **Figures 4.5-1 and 4.5-2.** Show the water table on these figures.

18. **Figures 4.11-4 and 4.11-5.** Several sample locations do not have posted results. Indicate wells at which samples were not analyzed for the posted analyte with NA. Otherwise post the data at these locations.
19. **Figure 4.17-1.** Based on the title (IR-60), this figure belongs in Section 4.18. Renumber it and reference it in the text.
20. **Figure 4.18-1.** Show the groundwater table on this figure. If groundwater level data is not available for this site use the Parcel B groundwater table contour map to estimate groundwater levels.

SECTION 5

General Comments

1. The introduction states that historical land use, nature and extent of contamination, and risk posed to human health and the environment would be summarized for each site. Typically, none of these aspects were described for each site. Instead, only recommendations were summarized. Review the site summaries for thoroughness and include the missing information, if appropriate.
2. Describe the physical setting of Parcel B. Include a summary of the geology and hydrogeology. Summarize the fate and transport of contaminants and risk assessment. Include a figure that summarizes the extent of groundwater contamination in Parcel B.

Specific Comments

1. **Section 5.0, pp. 5-1 through 5-3.** Many features (e.g., IR sites and exploratory excavation areas) are discussed in this section. Reference figures that show all of the features discussed in this section. Provide a figure that shows past and future interim actions. Provide a table with recommended actions for groundwater.
2. **Section 5.0, p. 5-1, last paragraph.** This paragraph states that the risks for Sites A and B are discussed. This information should be introduced in Section 4 and summarized in Section 5.
3. **Section 5.0, p. 5-3.** The interim action for groundwater no longer includes Parcel B. Delete this paragraph. Also delete statements about groundwater interim actions from the rest of Section 5.
4. **Section 5.1.** The HHRA recommendations are not appropriate.

All sites with carcinogenic risk greater than 1×10^{-6} should be recommended for the FS unless sufficient justification is provided and the risk managers agree that no further action is required.

5. Data gaps must be identified.

APPENDIX A

1. This appendix would benefit from professional technical editing. There are numerous missing words, typographic errors, misspellings and grammatical mistakes.
2. This discussion would be easier to follow if the current Parcel designation was identified for each site discussed in the text or presented in a table. This could be incorporated into the subsection headings, for example:

3.4 OLD TRANSFORMER STORAGE YARD (IAS SITE 6, PARCEL B)
3. There are several reviewer notes in Appendix A (p. A-5, paragraph 2 and paragraph 3; p. A-16, paragraph 3; and p. A-17, paragraph 1; and A-24, paragraph 1).
4. The flow of text seems to break down in sections. For instance, the relationship between Group sites and Study Area sites on pages A-16 and A-17 is unclear. Appendix A should be thoroughly reviewed and revised.
5. P. A-36ff. Table 5 is referenced, but is not included. The material for this table appears to be included in the text found on pages A-36 through A-64.
6. Figure 1.3-4 should be referenced.

APPENDIX C

General Comments

1. There are numerous misspellings, the sentence structure is awkward and there are many grammatical mistakes.
2. The placement of the geological discussion, which is only five and half pages long, in an appendix is of questionable benefit. A clear understanding of the geology of HPA is needed to gain an understanding of the routes of migration of contaminants. A stronger emphasis on the geology of HPA should be made in the main body of the report. Therefore, the discussion of the HPA geologic units should be placed in the main body of the report. See general comment #8.

3. The hydrogeologic conditions at the site are briefly described. This discussion of hydraulic conductivity, based on slug and pump tests, is confusing because the results are discussed first in Section 2.0 and the procedures are presented in the following Section 3.0. Please discuss the procedures first, then present the results. See general comment #8.
4. All drawdown curves and type curve matches for the pump tests should be included as figures. Also include tables of water level data and gradients.
5. A discussion of the procedures used in the tidal study should be included. Provide the hydrographs for each Parcel B well and tidal gauge used in the tidal studies. Use tidal efficiency to define the tidally influenced groundwater. Tidal efficiency is the water level change in a well divided by the corresponding change in tidal stage.
6. The sources of information used to compile the text should be cited.

APPENDIX D: AIR MONITORING

General Comments

1. State the number of samples collected for each analyte and the number of detections. No laboratory analytical data was supplied to verify whether the values listed were correct.
2. Analytical detections from sampling at air monitoring Sites 6 and 17 should be summarized and compared with EPA PRGs and the CARB study values in a separate table. This detection only table should assist in reviewing the sampling results.

APPENDIX F: ECOLOGICAL RISK ASSESSMENT

1. The RI does not contain ecological results from the Phase 1B fieldwork. Instead the section summarizes the Phase 1A evaluation, indicating there are no viable terrestrial habitats. Justification for stating that there are no viable habitats must be provided based on earlier review comments; i.e., terrestrial habitats cannot be "written off". The document also indicates there may be groundwater ecological concerns as the groundwater discharges into the bay but the groundwater impact will be evaluated as part of Phase 1B. Appendix F is the executive summary from the Phase 1A approach document submitted in September 1994. As stated in Appendix F, the Phase 1A executive summary has not been amended [per September 22, 1994 comments].

2. Until all September 22, 1994 comments are addressed, nothing can be written off at the site. It is assumed that all phase 1A and 1B comments will be addressed in the Phase 1B deliverable (fall, 1996).

APPENDIX H: CLIMATOLOGY AND SOILS

General Comments

1. This section contains numerous errors in sentence structure, grammar, and punctuation. The presentation is cumbersome, particularly in section 2.2. Some of the soil information is extraneous. A more concise format for the description of surficial soil units would be more appropriate.

Specific Comments

1. Section 1.0, p. H-2, paragraph 1. A short regional description of rainfall is helpful; however, this paragraph contains extraneous precipitation data. The table contains a concise summary of pertinent rainfall data.
2. A description of the average wind speed should be confined to one paragraph. This information appears on page H-1, paragraph 2, and again with a different reference on the following page (p. H-2, paragraph 3).

APPENDIX J

The boring logs in the vicinity of the EPA soil samples collected at IR-07 and IR-08 do not indicate the presence of granitic-derived materials as discussed in Appendix E, Attachment E-A, Section 4.0, p. 4. Please address this discrepancy.

APPENDIX O: FATE AND TRANSPORT

General Comments

1. The Fate and Transport discussion is much too general. It provides an abstract overview of physico-chemical parameters which can influence migration and transport. The section would be much more useful if it addressed specific migration pathways and retardation for contaminants of concern at each of the individual sites. Migration, solubilization, and volatilization rates as well as retardation, adsorption, and partition coefficients should be presented using site specific measurements or calculations.
2. It appears that many of the parameters required to determine or calculate estimated migration rates, retardation, partitioning, or adsorption factors were not obtained or even considered during the RI process. For example,

discussions of metals mobility and adsorption repeatedly include a statement that adsorption to clays is likely significant for retardation of metals, site soils have sufficient sorptive capacity, and that groundwater oxidation-reduction potential plays a major role.

3. For almost all organic contaminants discussed, the document repeatedly states:

"Biodegradation and biotransformation are significant processes responsible for the degradation of organic compounds in the saturated subsurface soil and groundwater at Parcel B. This assumption is based on the co-location of chlorinated hydrocarbons and their degradation products at several IR sites."

This assumption cannot be supported for all classes of organic contaminants discussed in Appendix O. Biodegradation and biotransformation pathways are compound and isomer specific, require very specific conditions to occur, and cannot be extrapolated to all organic chemical classes. The compounds and degradation products cited in the document are valid only for chloroethenes, i.e., tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (cis -1,2-DCE), and vinyl chloride. However, relative concentrations and degradation rates are not mentioned. Degradation pathways for chlorinated alkanes, chlorobenzenes, aromatic compounds, nitroaromatics, phenolic compounds, and PAHs are significantly different. No evidence was presented for degradation products of any of these other classes of compounds so it cannot be said that these are significant or important pathways.

5. The document also repeatedly states "Even though these data are not conclusive, they suggest that the clays and other minerals present in the fill contain sufficient sorptive capacity to sorb organic contaminants released at Parcel B." No data were collected or presented to support this statement. Organic contaminants primarily bind to soil organic matter, not clays and minerals.

ATTACHMENT 2
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
COMMENTS FROM THE QUALITY ASSURANCE MANAGEMENT SECTION

MEMORANDUM

SUBJECT: Parcel B Remedial Investigation Draft Report, Hunters Point Annex, San Francisco, California (EPA QAMS Document Control Number P3CA005W95VSF1)

FROM: Lisa Hanusiak, Chemist
Quality Assurance Management Section (P-3-2)

THROUGH: Vance S. Fong, P.E., Chief
Quality Assurance Management Section (P-3-2)

TO: Sheryl Lauth, Remedial Project Manager
Navy Section (H-9-2)

The subject remedial investigation (RI) draft report, prepared by PRC Environmental Management, Inc. and dated January 31, 1996, was reviewed. The review encompassed Volumes I, II, and VII through XI of the RI report. Volumes III, IV, V, and VI were not reviewed. The following documents were used for reference: "Preparation of a U.S. EPA Field Sample Plan for Private and State-EPA Lead Superfund Projects (9QA-06-93, August 1993); "EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations" (EPA QA/R-5, May 1994); "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic and Organic Data Review," (February 1994); and "Basewide Quality Assurance Project Plan (QAPP), Hunters Point Annex," (PRC Environmental Management, Inc., December 11, 1995).

Summary

Based on the information presented in the RI report, sample collection and data validation activities conducted as part of the RI were acceptable, and were performed consistently with the requirements outlined in the Basewide QAPP and standard operating procedures, although several minor discrepancies were observed. In general, criteria consistent with those applied by Region 9 were used in reviewing the data addressed in the subject RI report. Comments on the RI report are provided below.

Concerns

- 1A. [Appendix I, Section 1.8, Quality Assurance/Quality Control Field Samples; Appendix L, Quality Assurance/Quality Control Program] The RI report contains discrepancies regarding the

collection of field duplicate samples for the soil matrix. The text in Section 1.8 of Appendix I states that duplicate soil and groundwater samples were collected at an approximate frequency of 1 in 20 for each analysis, and Appendix L provides limits for the maximum acceptable relative percent difference (RPD) between duplicate results for soil and water samples. This is inconsistent with the collection requirements for field duplicate samples in the QAPP, which indicate that field duplicate samples were to be collected for aqueous matrices only. This discrepancy should be resolved.

- 1B. The frequency at which field duplicate samples were collected (i.e., 1 duplicate per 20 samples) appears to be inconsistent with the requirement specified in the QAPP (ten percent or one per week, whichever is greater), which is consistent with Regional guidance.
2. [Appendix I, Field Sampling Activities, Equipment, and Procedures; Appendix M, Laboratory Forms and Results for Parcel B] The text in portions of Appendix I of the RI report indicates that groundwater and surface water samples were analyzed for dissolved and total metals. This is consistent with the requirements of the basewide QAPP. However, a single set of metals data is presented in Appendix M for each sample; the data do not specify whether the results are for dissolved or total metals. It is unclear from the information presented in the RI report whether samples were analyzed for total and dissolved metals. If samples were analyzed for dissolved and total metals, the results for both parameters should be included in Appendix M, and a discussion should be provided of how data for dissolved metals were compared to data for total metals.
3. [Appendix L, Section 2.1.3, Field and Laboratory Precision; Table L-2, Data Validation Criteria; Table L-3, Project and Laboratory Qualifiers Assigned During Data Validation] The data validation procedures used for evaluating data associated with results for field duplicate samples appear to have been inconsistent with Region 9 data validation procedures. The information included in Table L-3 of Appendix L indicates that sample results may have been estimated ("J6" flag) or rejected ("R8" flag) due to problems with the precision between results for field duplicate samples. Region 9 validation procedures do not require the rejection of sample results based on results for field duplicate samples; results are estimated only. It is unclear whether applying Region 9 validation procedures would change the data qualifiers applied to these data. Overall, fewer analytical results may have been rejected.

4. [Appendix L, Tables L-4 through L-16] It would be helpful if an evaluation of data completeness (by percentage) were incorporated into Tables L-4 through L-16 for each measurement parameter of the Parcel B RI data set.
5. [Appendix M, Laboratory Forms and Results for Parcel B] The QAPP indicates that samples were to be analyzed for alkalinity by Standard Method (SM) 2320B. However, the data presented in Appendix M do not include results for alkalinity. If alkalinity was measured, the results should be incorporated into the tables. The availability of alkalinity results would allow for the calculation of an ion balance to verify the correctness of inorganic data. Appendix M also should incorporate conductivity results, which, in addition to providing a more complete characterization of the water samples, would provide a convenient check on results for total dissolved solids (TDS).
6. [Appendix M, Laboratory Forms and Results for Parcel B] Results for sulfate, but not chloride, were reported for certain samples in Appendix M, such as samples 9144X239 and 9144X240 from Station Number IR10MW29A2, collected on October 31, 1991. It is unclear whether this is an oversight, since these anions are analyzed simultaneously by EPA Method 300.0. The RI report should provide explanations for instances when certain analytical parameters were not measured.

Comments

1. [Section 2.3.4, Exploratory Excavations] The text in Section 2.3.4 of the RI report lists Parcel B exploratory excavation (EE) site EE08 twice. The text in this section should be corrected.
2. [Appendix L, Section 2.1.3, Field and Laboratory Precision; Table L-3, Project and Laboratory Qualifiers Assigned During Data Validation] The text in Section 2.1.3 of Appendix L indicates that sample results which were rejected due to laboratory precision problems were flagged "R8," while Table L-3 indicates that sample results which were rejected due to field duplicate precision problems were flagged with this qualifier. This discrepancy should be resolved.
3. [Appendix L, Section 2.1.6, Analytical and Matrix Performance] The text in Section 2.1.6 of Appendix L states that the relatively high incidence of serial dilution "exceedances" for zinc and potassium can be attributed to the high concentrations of these analytes in the soil samples analyzed. It should be noted that, in addition to high sample concentrations, non-compliant serial dilution

results indicate that a characteristic of the digestate matrix (e.g., viscosity or the presence of other analytes at concentrations high enough to interfere with detected analytes) is affecting the analyses.

4. [General] The RI report did not include a number of referenced tables and the figures which were referenced in the text and identified in the table of contents. As a result, the accuracy and consistency of the information provided in the tables and figures, including site maps, geological cross sections, and groundwater contour maps, could not be verified. Additionally, many of the tables incorporated in the text were not titled or identified by number.

Questions or comments regarding this review should be referred to Lisa Hanusiak, EPA QAMS, at (415) 744-1528.

March 22, 1996

Community Members of the Hunters Point Restoration Advisory Board

Post-it* Fax Note	7671	Date	3/22/96	# of pages	5
To	Michael McClelland	From	Chris Shinley		
Co./Dept.		Co.			
Phone #		Phone #	495-1786		
Fax #	244-3010	Fax #	495-1787		

Dear Mr. Powell

Community Members of the Hunters Point Restoration Advisory Board have reviewed the Parcel B Draft Remedial Investigation (RI) Report and offer the following comments.

Overall we are pleased with the quality of the report. The presentation and clarity of the report is, in general, above average. We particularly appreciated the series of maps presented in the Health Risk Assessment (Figures P.5-1 through P.5-9). Nonetheless, we identified a few areas where the analysis or the report can be improved.

General Comments

1. The executive summary ought to be presented in simple terms with the recommendations and next steps presented first followed by the rationale for these results. As it stands now, the executive summary is too long. It is encumbered with too much history and technical jargon and the recommendations are buried at the end. The two-page public summary also needs to be reorganized so that the recommendations are presented first.
2. We are concerned about the scope and quality of historical research undertaken to determine areas of potential contamination. Section 2 and Figure 1.3-3 inadequately describe this research, which formed the basis for locating all sampling. For example:
 - Were all available aerial and historical photographs examined for the presence of now-demolished buildings, old waste pits, debris piles, drum storage areas, bermed areas, above ground storage tanks, refueling areas, motor pools, transfer stations, etc.?
 - Were all available building plans reviewed for historic uses?
 - Were all available waste manifests, inspection reports, and environmental compliance reports reviewed?

At a minimum, Section 2.1 of the RI report should provide references to reports that describe the historical research undertaken at Parcel B.

3. We disagree with the approach outlined in the report that no action be taken at sites with total excess lifetime cancer risk of less than 1×10^{-4} (1 in 10,000), for the following reasons:

- The National Contingency Plan (NCP), the regulations that implement CERCLA/SARA, states that "the 10^{-6} risk level shall be used as the point of departure for determining remediation goals for alternatives when ARARs are not available or not sufficiently protective because of the presence of multiple contaminants at a site or multiple pathways of exposure." We interpret this to mean that sites which exceed 10^{-6} risk level shall be passed along to the feasibility study, and site remediation strategies/technologies be evaluated according to the requirements of the NCP. By recommending no action in the RI report for sites identified as falling between 10^{-4} and 10^{-6} risk levels, the Navy essentially by-passes the requirement to evaluate the "no-action" alternative in terms of the nine criteria outlined in the NCP, one of which is community acceptance.
- The no-action recommendations rely too heavily on the results of the human health risk assessment. The RI report suggests that the "need for action" will be further evaluated during the FS if carcinogenic risk at a site is higher than 9×10^{-4} or if the hazard index is greater than one. This means that sites showing estimated cancer risks less than 9×10^{-4} or an hazard index less than one are excluded from further analysis on the basis of the quantitative results alone. Yet the analyses performed to generate these numbers do not address key issues of concern to the community. For example, the "answer" does not include evaluation of potential fate, transport, and degradation of target chemicals (except as they may migrate into homegrown vegetables), or potential long term health problems other than cancer or the "critical" non-cancer effect. These factors must be evaluated at each of the sites showing risks between 10^{-4} and 10^{-6} to verify whether indeed they pose an insignificant threat to human health and the environment, over the long run. We suggest that a qualified toxicologist develop a comprehensive decision matrix for evaluating whether a site should be evaluated in the FS. A sample matrix is included with these comments as attachment 1.
- The Hunters Point Ambient Levels were set such that the Navy is fairly certain that background concentrations of metals are not under-estimated. As a result, as reported on page 4-9, "estimated total ELCRs from background conditions from naturally occurring metals in soils at HPA is approximately 1×10^{-5} ." By entirely eliminating background contributions from the risk assessment, the Navy has ensured that *only* activity-related contamination is counted in the human health risk assessment. Thus, human health risks associated with residual contamination must be *added to* the estimated background risk of 10^{-5} .

For these reasons, we would like all sites showing risks greater than 1×10^{-6} to be analyzed in the Feasibility Study.

4. Please include results of the Tidal Influence Study into all analysis.

5. Please check the document for typos and clarity before publishing as a draft final.
6. The San Francisco Chronicle reported on March 21, 1996 that the EPA suspended certification of a laboratory that may have analyzed samples from Hunters Point Naval Shipyard. Does this news affect samples taken from Parcel B?

Section-specific Comments

7. Page ES-14: The first paragraph on this page appears to conflict with the first bullet under "Recommendations for Soil Remediation." Please clarify.

8. Section 2.2.7 and 3.5: The RI report states that "exposure pathways in Parcel B to terrestrial species are minimal because of lack of habitat and predominance of paved areas." We don't believe it is enough to say that because the site is a mess, no important animals or plants live there. The terrestrial ecological risk assessment must address what communities of threatened or endangered species live near the site and might colonize it if the area were properly remediated. Furthermore, recommendations for cleanup must respect Policy 10.1 of the Hunters Point Shipyard reuse plan, which states that future development will, "protect and enhance the Shipyard's remaining natural resources" (emphasis added). In other words recommendations in the RI must consider questions such as:

- What opportunity might exist to enhance populations of threatened or endangered species, particularly in areas slated to be open space or restored wetland?
- What level of remediation ought to be pursued if a population of threatened or endangered species exists within a reasonable migration distance from the site, and could potentially recolonize the area?

As it stands now, no information is available to help planners and the public assess these questions.

Furthermore, since the ecological risk assessment will not be finished until after the RI is complete, how will ecological risks be factored into remediation planning and the Feasibility Study?

9. Section 3.9: Is groundwater at Parcel B considered a potential drinking water source by the Regional Water Quality Control Board? If not, please provide evidence that the RWQCB concurs that groundwater at Parcel B does not meet present or probable municipal water supply criterion.

What if an earthquake severely disrupted water supply from the Hetch Hetchy distribution system, would groundwater at Parcel B be fit to drink in such an emergency? What would be the health risks to people who did so?

10. Section 4: U.S. EPA guidance (1991) specifying that "if carcinogenic risk is less than 1×10^{-4} , action is generally not recommended unless chemical-specific standards are violated, there are noncarcinogenic effects, or there are adverse environmental impacts," is not referenced.

11. Page 4-9: How was it determined that "estimated total ELCRs from background conditions from naturally occurring metals in soils at HPA is approximately 1×10^{-5} (1 in 100,000)?" Why, "therefore" are only human health risk scenarios with total ELCRs equal to or above 1×10^{-5} , summarized in Section 4?
12. Appendix B: how do Hunters Point Ambient Levels compare to ambient levels measured and estimated in other parts of the San Francisco Bay Area, perhaps by the US Geological Survey?
13. Appendix M: please provide a key for the shading on the tables in Appendix M.
14. Figure P-3.1: The "Conceptual Site Model" shows that inhalation of soil (0 to 10 feet bgs) was not evaluated in the risk assessment. It appears that this pathway was evaluated in the earlier risk assessment (Appendix N) under the current land use scenario (0 - 2 feet bgs) for workers. The community believes that the current worker scenario, including inhalation of dust, should be retained in the analysis, even though estimated risks reported in Appendix N for this scenario at Parcel B were reported to be within EPA's acceptable risk range. The scenario should be retained for all parcels because, for the next few years, workers (both site remediation workers and those working for companies holding interim leases at the site) will be the primary human receptors. Furthermore, we have received questions from members of the community about potential exposure and health effects to workers from fugitive dust. The concern comes from residents and potential workers witnessing dust plumes at Hunters Point Shipyard arising from remedial activities, generally windy conditions at the barren site, and because of interim use proposals that may introduce heavy vehicular, and possible helicopter, traffic to the Shipyard.
15. Section P.4.3: The last paragraph of this section states that "no accepted toxicity factors are currently available for petroleum hydrocarbon mixtures." While this may be true, at the Presidio risk assessors used a surrogate method to assign risk to gasoline-, diesel-, and fuel oil-range compounds. Was this approach considered by the Navy for Hunters Point Shipyard?
16. Section P.4.4: The uncertainty analysis seems weak. For example, the risk assessment does not address toxicity of the heavier constituents of petroleum products. So in areas contaminated with petroleum, total cancer risks and non-cancer hazards may be underestimated. Second, the risk assessment does not address all potential toxic effects, only cancer and non-cancer critical effects. Please do a more thorough job of listing and assessing areas of uncertainty and data gaps.
17. Figures P.5-1 through P.5-3: It would be very helpful to the community if squares which have had soil samples evaluated, but the risks were determined to be less than 10^{-6} are colored (green, yellow). In this way it will be clear where samples were collected but contamination poses little risk to human health, versus areas that were never sampled.
18. Section P-F: The toxicity profiles need to be expanded to address possible health effects other than those analyzed in the human health risk assessment.

The community members of the Hunters Point Restoration Advisory Board support a remediation strategy that protects the long-term health of all potential residents and users of Parcel B. We hope our comments help the Navy to successfully remediate Parcel B. We look forward to your reply.

Sincerely,

The Undersigned Community Members of the Hunters Point Restoration Advisory Board

Karen Huggins
Doug Kern
Scott Madison
Christine Shirley
Charlie Walker
Al Williams

Attachment 1 -- Sample Decision Matrix

No action recommendations in the RI report rely too heavily on the results of the human health risk assessment. We proposed in our letter that a qualified toxicologist prepare a comprehensive decision matrix to supplement the quantitative health risk assessment. Presented below is a sample matrix, which we include to illustrate what we have in mind. Such a matrix would apply to all sites that show estimated risks between 10^{-4} and 10^{-6} . When questions are answered "yes" or "unknown," then we suggest that remediation strategies be pursued that bring risks down to the 10^{-6} level.

DECISION CRITERIA	YES	NO	UNKNOWN
Fate and Transport Issues			
Is the area underlain with stormdrains, utility trenches, or other structures that facilitate migration?			
Is the area tidally influenced?			
Are compounds at the site likely to migrate?			
Are compounds at the site likely to persist?			
Are compounds at the site likely to degrade into more toxic compounds?			
Are compounds at the site likely to bioaccumulate?			
Toxicity Issues (in addition to cancer and critical effects)			
Immunological effects?			
Hormonal effects?			
Neurological effects?			
Reproductive effects?			
Developmental effects?			
Genotoxic effects?			
Second-generation effects? (i.e. breastmilk)			
Synergistic effects			